Abstract

Method and system for improving the quality of transportation of selected data packets over a data network. Selected nodes are determined as access points to the data network, such that each node may be a source node from which the selected data packets can be transmitted, or a destination node to which the selected data packets can be intended. One or more intermediate nodes are selected, for generating a plurality of alternative paths between the source node and the destination node. Each of the alternative paths consists of segments and includes one or more intermediate nodes for routing the selected data packets. The packet transportation parameters are periodically tested in the segments of each preselected path, each time by sending a plurality of test packets from the source node to the destination node, along the preselected paths defined by different intermediate nodes, the addresses of which are known to the source node. One or more optimal paths, being selected from the alternative paths are defined, for delivering the selected data packets from the source node to the destination node according to the tested transportation parameters. Optimal paths may also be defined according to predefined parameters characterizing the segments by selecting a combination of segments, connected to nodes, and having the optimal tested transportation parameters and/or predefined parameters, that connects the source node to the destination node. A modified header containing a single address or sequence of consecutive addresses that correspond to consecutive nodes along an optimal path, is generated for each selected data packet, and attached to the selected data packet. Each selected test/data packet is forwarded from the source node to the destination node along the optimal path(s), while at each intermediate node, along the optimal path, starting from the source, the modified header is processed and the address that corresponds to the next consecutive intermediate node is extracted. The selected data packet is forwarded from the intermediate node to its consecutive intermediate node using the extracted address. This process is repeated for all intermediate nodes until the destination node, at which the modified header is removing from the selected data packet and, whenever desired, its original header is used.